

Washington State Energy Office News

Nov 2016



Monthly News Energy Review



Oil Industry's New Threat? The Global Growth of Electric

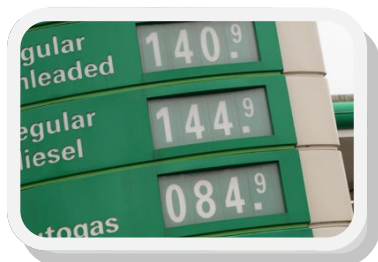


Coal doesn't help the poor; it
makes them poorer



Energy & Climate Articles

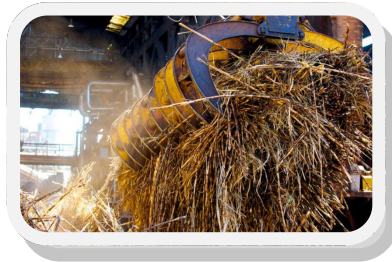
[Click on graphics to access articles](#)



Too Many Energy
Discussions Ignore
Prices

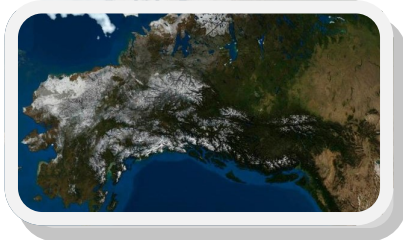


Renewable energy
capacity overtakes coal

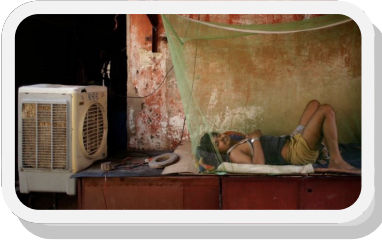


Big Oil Slowly Adapts
to a Changing World

Climate Change



Nine Cities to Live
in If You're Worried
About Climate
Change



India's Air-
Conditioning &
Climate Change
Quandary



Coffee & Climate
Change: In Brazil, a
Disaster Is Brewing

Electricity Resources



After 20 Years of Nuclear
Dormancy, A New Reactor
Emerges in the US



Irrigators Propose Giant
Hydroelectric Project
Near Grand Coulee Dam



UN says carbon dioxide
at record levels



Zero/Low emission gear



Over Half a Million
Plug-In Vehicles Have
Been Sold in the
United States



Plunging Solar
Equipment Prices
Fuel Trade Com-



Power Couple: Tie-up
Shows How Batteries
and Solar May Link

Northwest Energy Politics



Dozens of energy projects
referred to DOJ

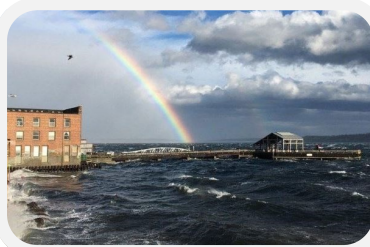


LNG Plant Faces
Heated Criticism at
Hearing Over PSE
Financial Agreement

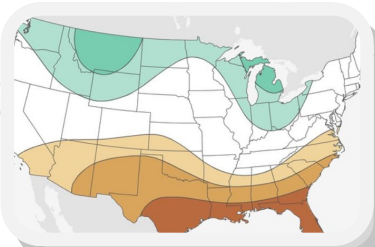


Taking Down Snake
River Dams: It's
Back on the Table

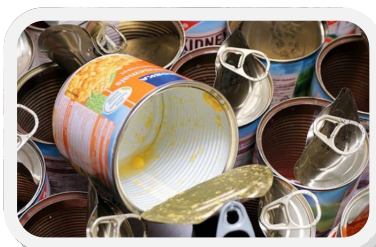
Winter Storms and Preparedness



What the Heck Went
Wrong with the Storm
Forecast?!!?



Expect A Wet Winter
Around Puget Sound



Enough Supplies for
Two Weeks? Changes
to Earthquake
Preparedness



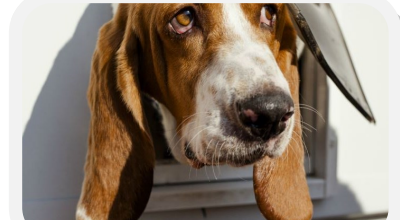
Miscellaneous



If we want to combat climate change, we must re-engineer our landfills

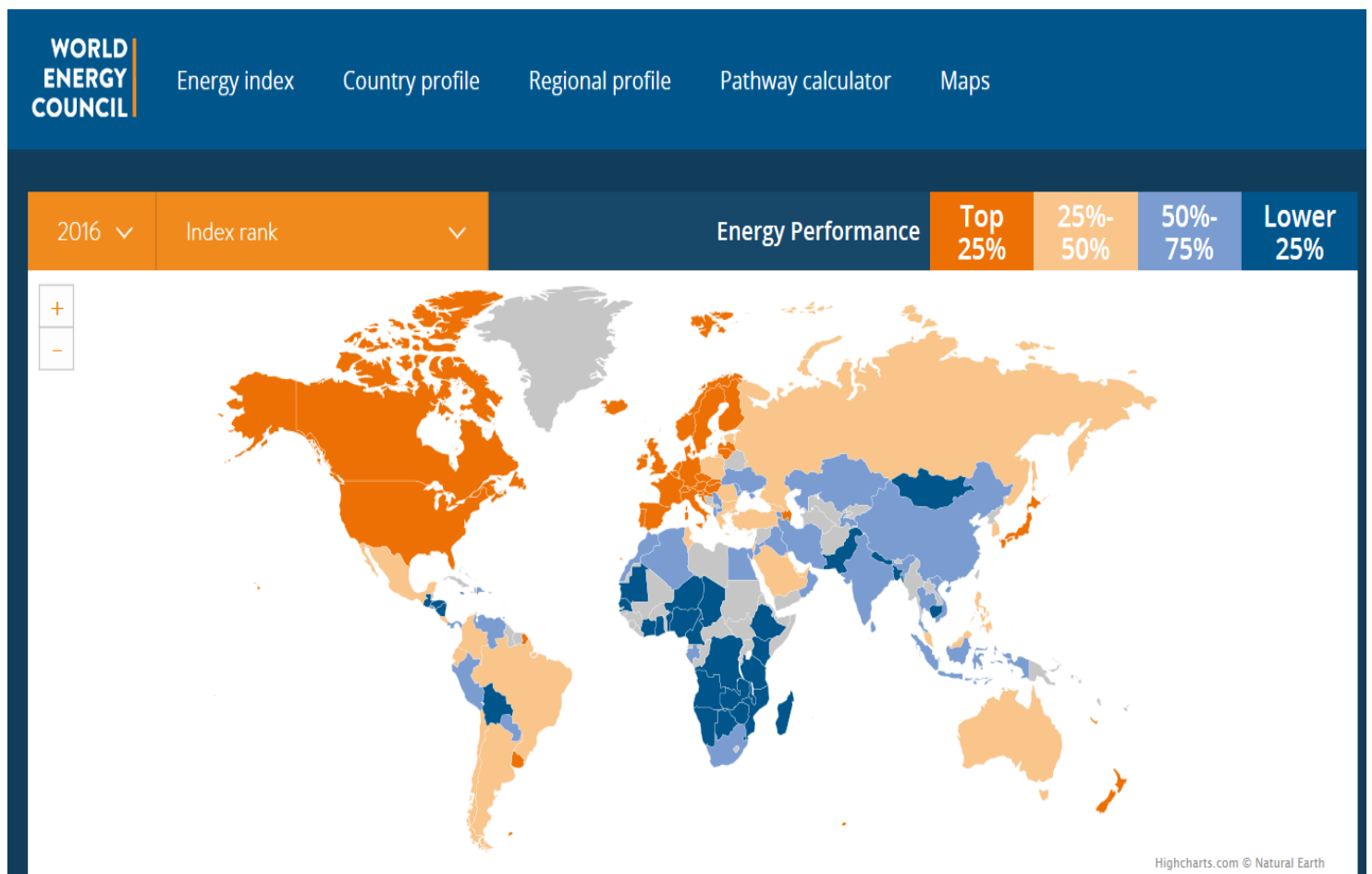


California has new carbon reduction goal, but details of impacts still fluid



Your Doggie Door Is Probably Wasting Energy – But You Can Fix That

World Energy Index





Energy & Climate Video/Graphics

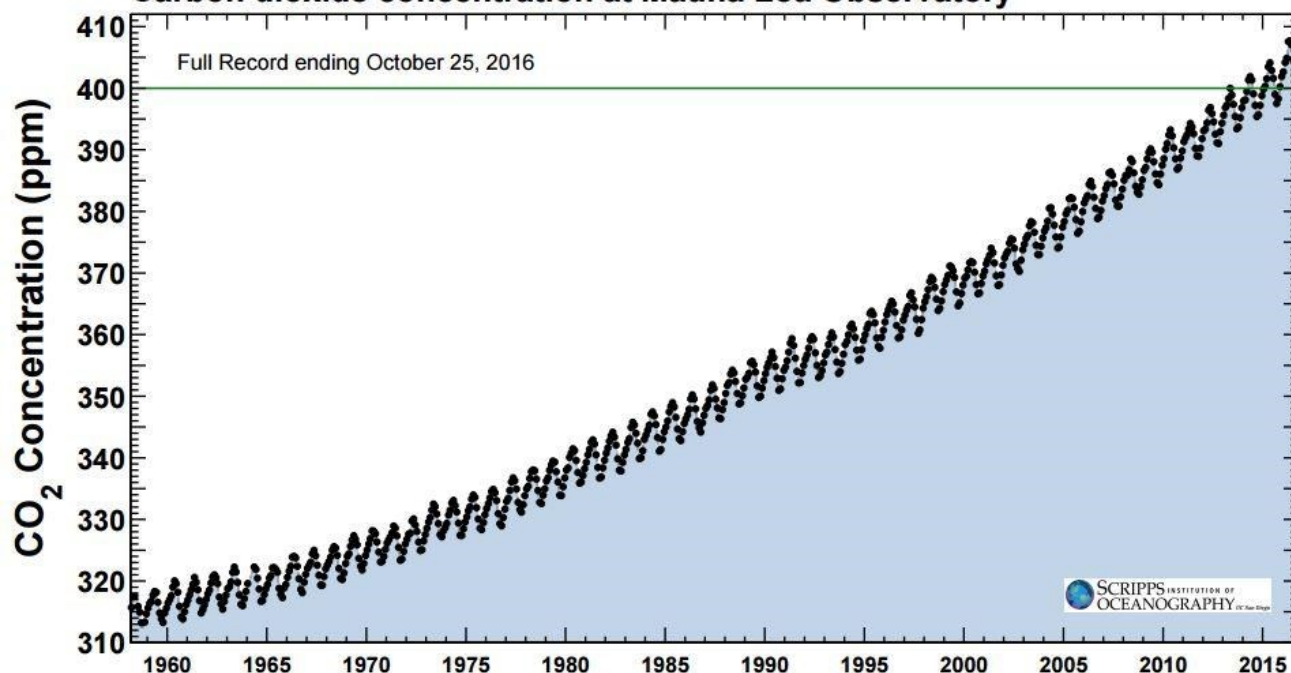
[Click on graphics to access articles](#)

Listen: 58 years of climate change in one

Latest CO₂ reading
October 25, 2016

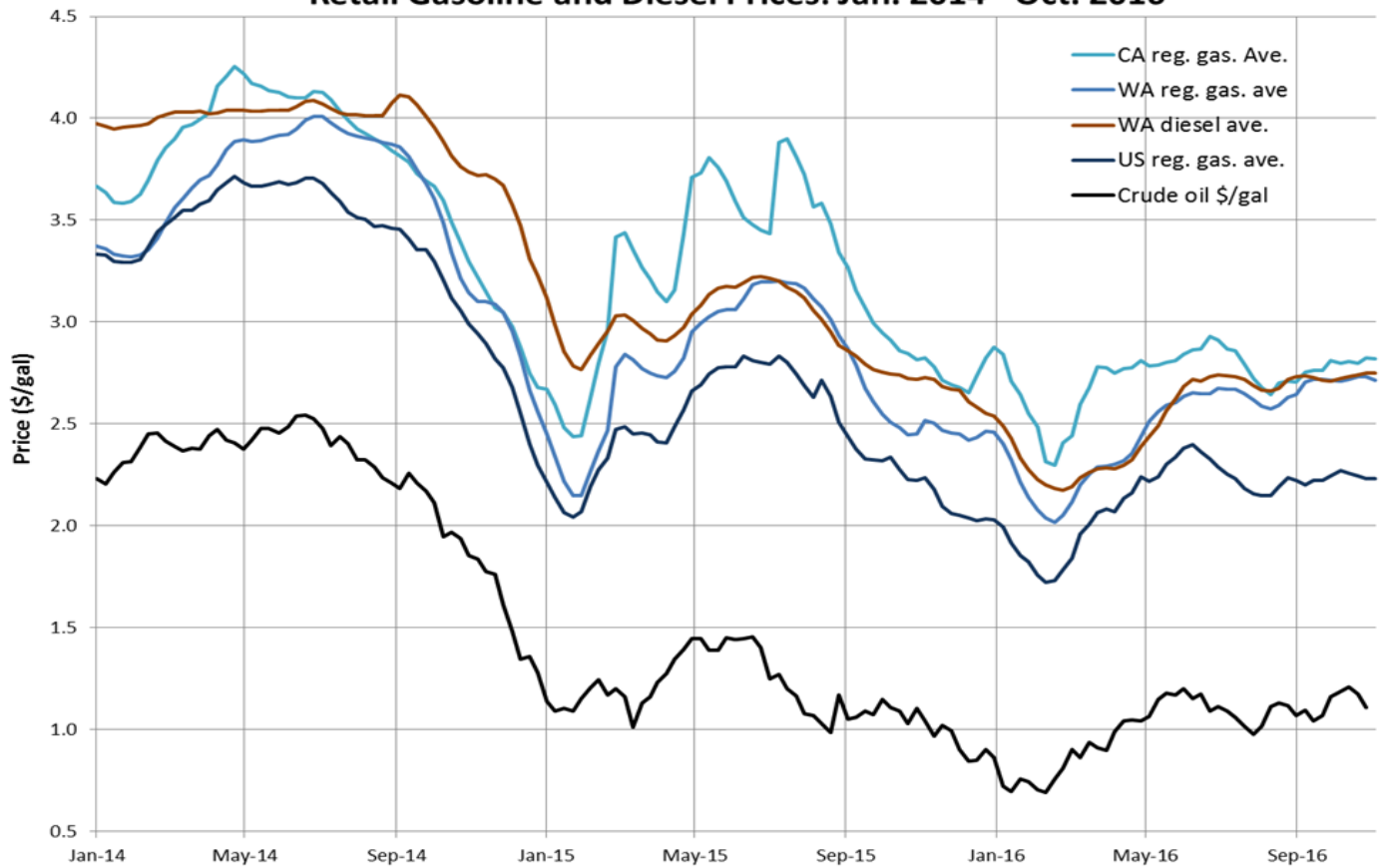
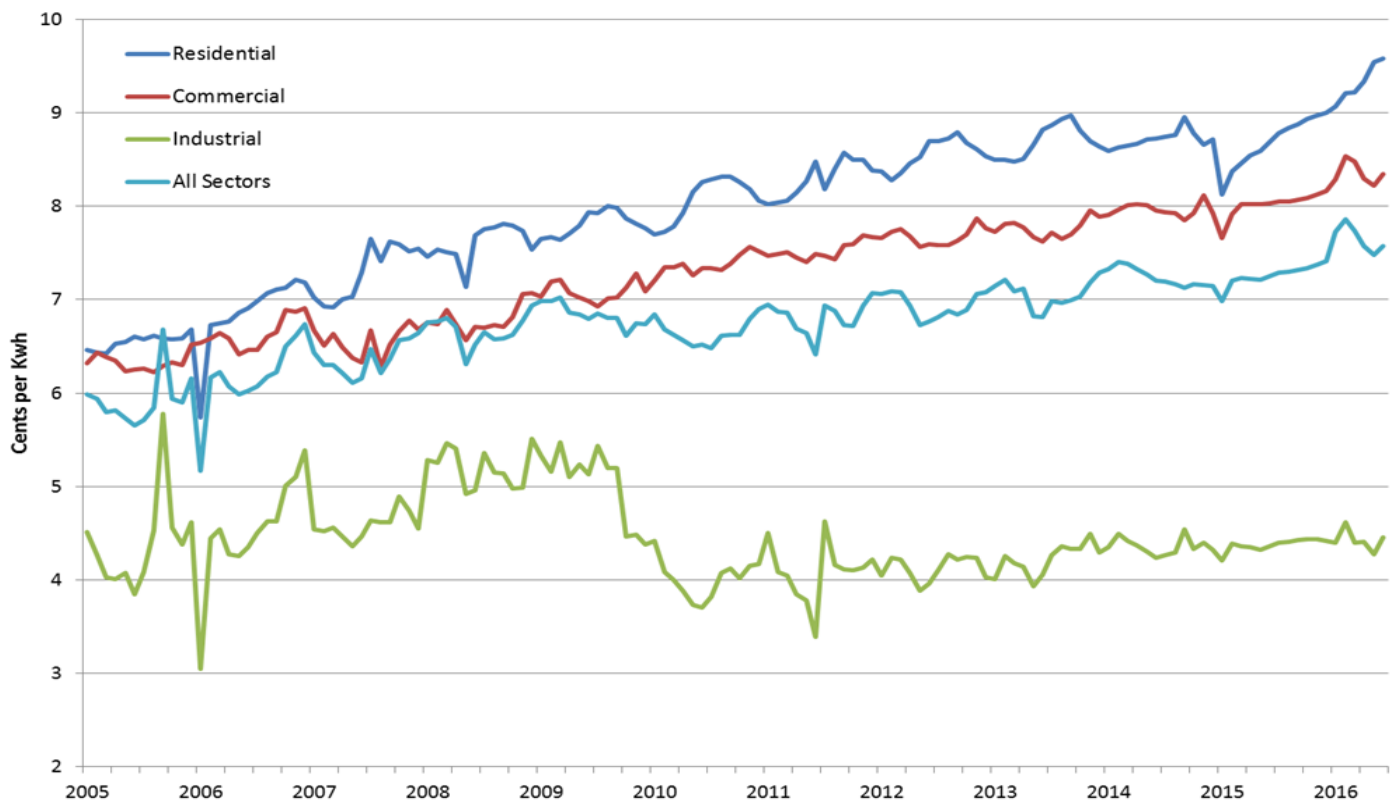
401.74 ppm

Carbon dioxide concentration at Mauna Loa Observatory



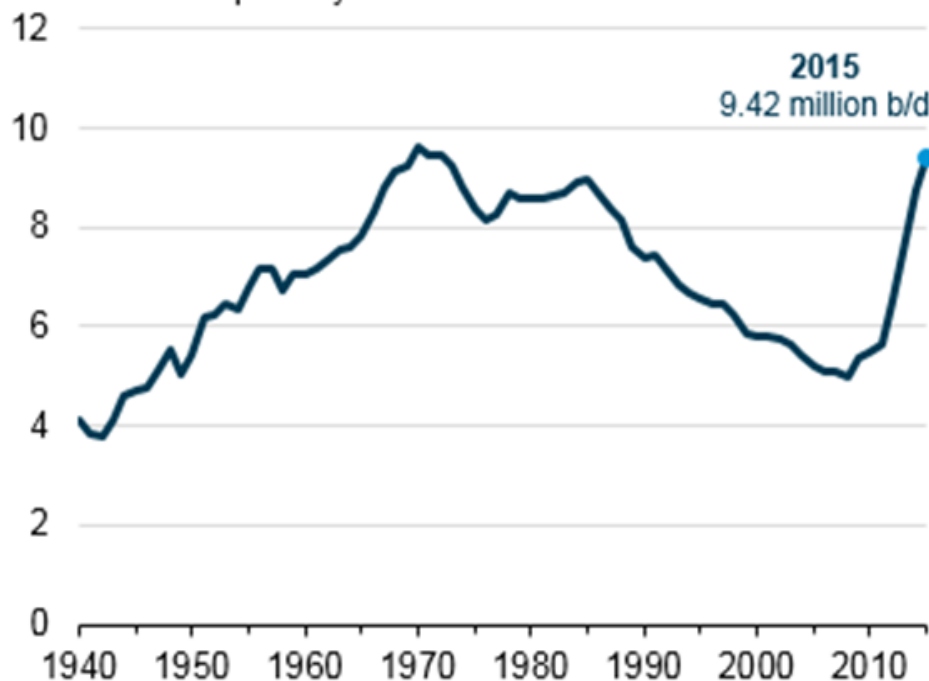
World Energy Council Data Map



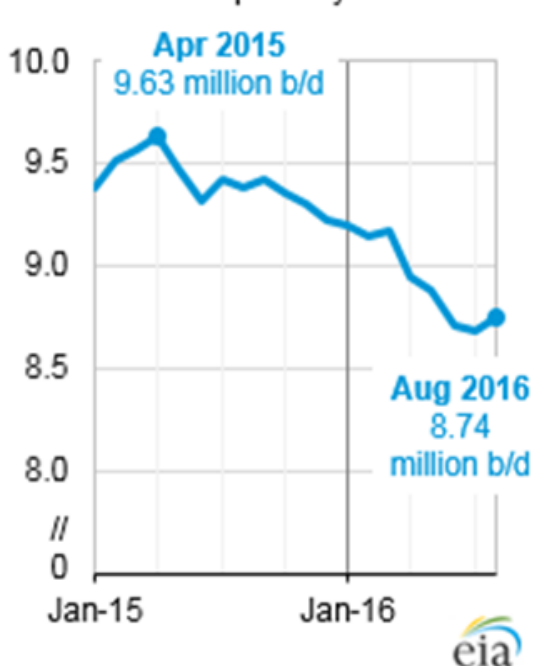
**Retail Gasoline and Diesel Prices: Jan. 2014 - Oct. 2016****Washington State Electricity Rates by Sector: Jan. 2005 - Aug. 2016**



U.S. field production of crude oil (1940-2015)
million barrels per day



Monthly production (2015-16)
million barrels per day



US production of crude oil increased in 2015 for the seventh consecutive year, averaging 9.42 million barrels per day, the highest rate since 1972. Oil prices dropped in late 2014 and US production peaked at 9.63 million barrels per day in April of 2015, and has declined since: see chart to the right.

River & Snow Pack Info

Observed Oct. stream flow at The Dalles: 142% of average.
Observed Oct. precipitation above The Dalles: 212% of average.
Est. 2016 Final runoff at The Dalles (Jan.—July): NA
Estimated snowpack: NA
Federal hydropower generation in Sept. : 5,234 aMW, 2011-2015 average: 5,699 aMW.
Reservoir content (Libby, Hungry Horse, Grand Coulee, Dworshak): Oct. 83%, 5-year average: 83%.

River Data

Data for Nov. 6	Outflow (kcfs)	Ave. outflow for last 10 years (kcfs)
(Snake) Lower Granite	22.5	19.6
(Columbia) The Dalles	128.7	108.4

Energy Price Overview

Petroleum: Crude oil prices started increasing towards the end of September and continued the trend for most of October, at which point they averaged 20% higher. The price increase followed the negotiation of a loose production cap for the oil exporting nations. Over the last three weeks the price gains have almost completely disappeared due to increasing or abnormally high crude oil and product inventories. Lesson: It is difficult for a cartel to control commodity prices.

Transportation Fuels: Transportation fuel prices held steady during October and early November, in part due to the previously mentioned increase/decrease in crude oil prices and another shutdown of the Colonial pipeline that runs from Texas to the east coast. As of last week, national (average) gasoline prices were 2 cents lower and national diesel were 9 cents per gallon higher relative to the first week of the October: national gas and diesel were \$2.23 and \$2.48 per gallon respectively. Washington state average gasoline price for the same period was 2 cents higher relative to the first week of Oct at \$2.73 per gallon, while diesel increased 4 cents to \$2.75 per gallon.

Natural Gas: Over the last month natural gas prices have increased slightly as US demand increased and production has declined modestly: Year-on demand is up by 2+%, production down by 1+%. The price for month a head NYMEX natural gas increased to \$3.08 per MMBtu. Locally, the average July natural gas spot price at the Kingsgate hub rose to \$2.53 per MMBtu. Gas storage levels are 3,963 Bcf, about 4.6% above the 5-year storage average for this time of the year: many storage facilities are nearly full and have stopped accepting natural gas for injection. Gas storage in the Pacific region is running 10.7 % below the 5-year average.

Electricity: October saw declining electricity market prices as demand remained low due to warmer than average temperatures and rainfall that was far above normal in most of the PNW. The average spot price was \$22.6 per MWh, about \$5 less than the previous month, and \$0.8 less than for Oct. 2015. October rainfall set records at many weather stations and consequently the Columbia and Snake River flow and power generation levels are about normal. See River Data table and the Power Generation tables on page 7.

Energy Price Summary, Nov. 1, 2016	Current	Month Ago	Year Ago
Monthly Range at Mid-C (Peak: \$ per MWh)	12-27.3	23.5-37.3	16.5-27
Average Mid C price (Peak hours \$ MWh, current month)	22.6	27.8	23.3
Electricity WA Ave. Retail: Aug. (cents/kWh)	7.64	7.66	7.30
Natural gas Kingsgate spot price (next day: \$ per million BTU)	2.06	2.48	2.33
Natural gas Sumas futures price (next month \$ per million BTU)	2.61	2.63	2.31
Natural gas Sumas monthly average: Aug. (\$ per million BTU)	2.40	2.31	2.39
Natural gas H.H. futures (NYMEX next month: \$ per million BTU)	3.08	3.00	2.43
E85 (national average: \$ per gallon gasoline)	2.20	2.13	2.67
Ethanol (CBT next month contract: \$ per gallon)	1.53	1.55	1.60
Corn (CBT next month contract: \$ per bushel)	3.47	3.30	3.80
Petroleum, West Texas Intermediate futures (\$ per barrel)	46.7	48.8	45.1
Seattle gasoline price (\$ per gallon, last week of the month)	2.77	2.76	2.51
Gasoline futures (NYMEX next month: \$ per gallon)	1.49	1.38	1.35
State diesel price (\$ per gallon, last week of the month)	2.75	2.71	2.72
Heating oil futures (NYMEX next month: \$ per gallon)	1.57	1.42	1.47
U.S. residential propane price report (\$ per gallon)	2.04	NA	1.92
Clean Cities: Alternative Fuel Price Report, July 2016	Current US avg	Current qtr west coast	Last qtr avg west coast
Ethanol E85 (\$ per gas gallon equiv.)	2.59	3.12	2.39
Biodiesel B20 (\$ per diesel gallon equiv.)	2.59	2.89	2.27
Biodiesel B99-100 (\$ per diesel gallon equiv.)	3.33	3.59	3.09
Compressed Natural Gas (\$ per gas gallon equiv.)	2.05	2.36	2.02
Propane (\$ per gas gallon equiv.)	3.78	4.04	3.79